

5 **DEVICES AND METHODS FOR MINIMIZING START UP DELAY**
IN TRANSMISSION OF STREAMING MEDIA

10 **ABSTRACT**

Devices and methods are provided for minimizing the startup delay of streaming media transmitted through networks. A server maintains a portion of the media stream stored in an initial burst transmit buffer. At startup, the stored portion is transmitted at a rate higher
15 than the fixed frame rate, exploiting the full available bandwidth. The initial burst transmission fills up the de-jitter receive buffer at the receiving end faster, thereby shortening the startup delay. Then transmission is switched to the regular rate, from the regular buffer. A variable bit rate transcoder is optionally used for the data of the initial transmission. The transcoder diminishes the size of these frames, so they can be transmitted faster. This
20 shortens the start up delay even more. A receiver has a buffer with a fill level started at a value lower than a final value. This triggers the beginning of play out faster, further shortening the delay time. The fill level of the de-jitter receive buffer is then gradually increased to a desired final value.